IN THE CLAIMS

1. (Canceled)

2. (Currently Amended) A method for transforming the geometry of a solid model with [a] an arbitrary transformation function, comprising the steps of:

providing a procedural solid modeler which supports using procedural surfaces and curves to allow the use of composition of arbitrary functions to define surface and curve geometry functions, said modeler comprising a transformation component adapted to permit the definition of arbitrary transformation functions and to create composed surface and curve geometry functions by composing surface and curve geometry functions with said arbitrary transformation functions;

obtaining a solid model having a topology and a geometry corresponding to said topology, said topology comprising one or more faces, edges and /or vertices, said geometry comprising one or more surfaces, [or] curves, and/or positions, where each surface in the geometry corresponds to a face in the topology, each curve in the geometry corresponds to an edge in the topology and each position in the geometry corresponds to a vertex in the topology, and each surface or curve is defined by a parametric function mapping from a domain space to 3-dimensional space;

defining a transformation function; [and]

[transforming] operating said transformation component to transform the geometry of the solid model by [composing each function of said geometry with said transformation function] creating new surfaces, curves and /or positions defined by composing each surface and curve function of the geometry with said transformation function and by transforming each position of the geometry by said transformation function; and

resetting the geometry of said solid model to create a procedural solid model by replacing the underlying geometry of each face, edge and/or vertex with surface, curve and/or position geometry, respectively, defined in the case of surface and curve geometry by the new, transformed functions corresponding to the original representing functions and in the case of position geometry by the new, transformed positions.

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Previously presented) The method as claimed in claim 2, further comprising the step of displaying the solid model after the step of transforming the geometry.

8. (Previously presented) The method as claimed in claim 2, further comprising the step of storing said solid model after the step of transforming the geometry.

9. (Canceled)

10. (Canceled)

11. (Previously presented) The method as claimed in claim 2 where the transformation function defines a non-linear transformation.

12. (Previously presented) The method as claimed in claim 2 where the transformation function defines a bend transformation.

13. (Previously presented) The method as claimed in claim 2 where the transformation function defines a stretch transformation.

14. (Previously presented) The method as claimed in claim 2 where the transformation function defines a twist transformation.

15. (Currently Amended) A method for transforming a solid model using a generalized transformation function mechanism, comprising the steps of:

providing a computer aided design system based on a solid modeler which supports using procedural surfaces and curves to allow the use of composition of arbitrary functions to define surface and curve geometry functions [adapted to display a solid model and], said solid modeler having a transformation component adapted to [transform said solid model using a transformation function] permit the definition of arbitrary transformation functions and to create composed surface and curve geometry functions by composing surface and curve geometry functions with said arbitrary transformation functions;

obtaining [said] a procedural solid model, wherein said solid model has a geometry and a topology, said geometry [comprising] comprises one or more surfaces, [or] curves and/or positions, where each surface or curve is defined by a function, and said topology comprises one or more faces, edges and/or

vertices, where each surface in the geometry corresponds to a face in the topology, each curve in the geometry corresponds to an edge in the topology and each position in the geometry corresponds to a vertex in the topology;

[displaying said solid model;]

obtaining a transformation function;

operating said transformation component to [transform the geometry of said solid model by composing the functions of the geometry with said transformation function] create new surfaces, curves and/or positions defined by composing each surface and curve function of the geometry with said transformation function and by transforming each position of the geometry by said transformation function; and

resetting the geometry of said solid model to create a procedural solid model by replacing the underlying geometry of each face, edge and/or vertex with surface, curve and/or position geometry, respectively, defined in the case of surface and curve geometry by the new, transformed functions corresponding to the original representing functions and in the case of position geometry by the new, transformed positions.

[displaying the solid model after the geometry has been transformed with said transformation function; and

storing said solid model after the geometry has been transformed with said transformation function.]

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Previously presented) The method as claimed in claim 15 where the transformation function defines a non-linear transformation.

23. (Previously presented) The method as claimed in claim 15 where the transformation function defines a bend transformation.

24. (Previously presented) The method as claimed in claim 15 where the transformation function defines a stretch transformation.

25. (Previously presented) The method as claimed in claim 15 where the transformation function defines a twist transformation.

26. (Canceled)

27. (Canceled)

28. (New) The method as claimed in claim 2 where the transformation function is a non-polynomial function.

29. (New) The method as claimed in claim 2 where the transformation function is a trigonometric function.

30. (New) The method as claimed in claim 2 wherein the transformation component supports non-polynomial functions.

31. (New) The method as claimed in claim 2 wherein the transformation component supports trigonometric functions.

32. (New) The method as claimed in claim 2 wherein the transformation component supports non-linear transformations.

33. (New) The method as claimed in claim 2 wherein the transformation component supports bend transformations.

34. (New) The method as claimed in claim 2 wherein the transformation component supports stretch transformations.

35. (New) The method as claimed in claim 2 wherein the transformation component supports twist transformations.

36. (New) The method as claimed in claim 15, further comprising the step of displaying the solid model after the step of transforming the geometry.

37. (New) The method as claimed in claim 15, further comprising the step of storing the solid model after the step of transforming the geometry.

38. (New) The method as claimed in claim 15 where the transformation function is a non-polynomial function.

39. (New) The method as claimed in claim 15 where the transformation function is a trigonometric function.

40. (New) The method as claimed in claim 15 wherein the transformation component supports non-polynomial functions.

41. (New) The method as claimed in claim 15 wherein the transformation component supports trigonometric functions.

42. (New) The method as claimed in claim 15 wherein the transformation component supports non-linear transformations.

43. (New) The method as claimed in claim 15 wherein the transformation component supports bend transformations.

44. (New) The method as claimed in claim 15 wherein the transformation component supports stretch transformations.

45. (New) The method as claimed in claim 15 wherein the transformation component supports twist transformations.